

CLAIMS

1. A bearing unit for rotatably supporting a shaft, comprising:
 - a seamless holding member with a gap allowing a shaft to run through and extend to the outside;
 - a bearing arranged in the inside of the holding member to support the shaft so as to make it radially revolvable;
 - an anti-shaft-release member fitted to the shaft so as to abut the bearing in order to prevent the shaft from slipping away in the thrusting direction; and
 - a space-forming member arranged in the inside of the holding member so as to secure a space around the anti-shaft-release member.
2. The bearing unit according to claim 1, wherein the anti-shaft-release member and the shaft are formed integrally with each other.
3. The bearing unit according to claim 1, wherein the holding member is made of a polymeric material and the gap is defined by the holding member and the shaft at the position where the shaft extends from the holding member.
4. The bearing unit according to claim 1, wherein the space-forming member is made of a polymeric material and operates as thrust bearing for rotatably supporting the shaft at an end of the latter in the thrusting direction and the end of the shaft is made to show a spherical profile while the thrust bearing is a pivot bearing.

5. The bearing unit according to claim 1, wherein it is provided with dynamic pressure generating grooves on the outer peripheral surface of the shaft or on the inner peripheral surface of the bearing.

6. The bearing unit according to claim 2, wherein the surface of the anti-shaft-release member or the surface of the space-forming member arranged vis-à-vis the anti-shaft-release member is provided with dynamic pressure generating grooves.

7. The bearing unit according to claim 1, wherein the shaft and the space-forming member are made of an electrically conductive material and the space-forming member is exposed to the outside through the holding member.

8. A rotary drive including a bearing unit for rotatably supporting a shaft, comprising:

a seamless holding member with a gap allowing a shaft to run through and extend to the outside;

a bearing arranged in the inside of the holding member to support the shaft so as to make it radially revolvable;

an anti-shaft-release member fitted to the shaft so as to abut the bearing in order to prevent the shaft from slipping away in the thrusting direction; and

a space-forming member arranged in the inside of the holding member so as to secure a space around the anti-shaft-release member.

9. A bearing unit having a shaft and bearing means for rotatably supporting

the shaft, comprising:

a lubricating oil seal member arranged between the shaft and the bearing means with a gap interposed between them; and

a housing member made of synthetic resin for holding the lubricating oil seal member and the bearing means from the outer peripheries thereof.

10. The bearing unit according to claim 9, wherein

a radial bearing means for bearing the radial load being applied to the shaft and a thrust bearing means for bearing the thrust load being applied to the shaft are provided as the bearing means,

and further comprising:

an anti-shaft-release member attached to said shaft, and

a space-forming member provided separately from the lubricating oil seal member in order to secure a space around said anti-shaft-release member, wherein

the radial bearing means, the lubricating oil seal member and the space-forming member are held by the housing member.

11. The bearing unit according to claim 9, wherein the housing member is made of a polymeric material.

12. The bearing unit according to claim 10, wherein a hydrodynamic fluid bearing is used as the radial bearing means.

13. The bearing unit according to claim 10, wherein the thrust bearing means is realized by making an end of the shaft to show a curved profile and bringing it into

contact with the second member.

14. The bearing unit according to claim 9, wherein the part of the shaft adapted to form a gap with the lubricating oil seal member is tapered so as to have a diameter that increases toward the inside of the shaft.

15. The bearing unit according to claim 10, wherein a hydrodynamic fluid bearing is formed as the thrust bearing means by using the anti-shaft-release member and the space-forming member.

16. A rotary drive comprising a rotary body, a shaft adapted to revolve with the rotary body, bearing means for rotatably supporting the shaft and drive means for driving the rotary body to revolve, wherein

a lubricating oil seal member arranged so as to produce a gap between the shaft and a housing member made of synthetic resin for peripherally holding the member and the bearing means are provided.

17. The rotary drive according to claim 16, wherein

radial bearing means for bearing the radial load being applied to the shaft and thrust bearing means for bearing the thrust load being applied to the shaft are provided as the bearing means,

and further comprising:

an anti-shaft-release member attached to said shaft, and

a space-forming member provided separately from the lubricating oil seal member in order to secure a space around the anti-shaft-release member, wherein

the radial bearing means, the lubricating oil seal member and the space-forming member are held by the housing member.

18. The rotary drive according to claim 16, wherein the housing member is made of a polymeric material.

19. The rotary drive according to claim 17, wherein a hydrodynamic fluid bearing is used as the radial bearing means.

20. The rotary drive according to claim 17, wherein the thrust bearing means is realized by making an end of the shaft to show a curved profile and bringing it into contact with the second member.

21. The rotary drive according to claim 16, wherein the part of the shaft adapted to form a gap with the lubricating oil seal member is tapered so as to have a diameter that increases toward the inside of the shaft.

22. The rotary drive according to claim 17, wherein a hydrodynamic fluid bearing is formed as the thrust bearing means by using the anti-shaft-release member and the space-forming member.

23. A bearing unit comprising:

a shaft;

a radial bearing for peripherally supporting the shaft;

a thrust bearing for supporting an end of the shaft in the thrusting direction thereof;

a space-forming member arranged outside the radial bearing and the thrust

bearing;

a housing having the space-forming member in the inside and hermetically sealed except a shaft receiving hole through which the shaft is made to extend;

viscous fluid filled in the housing; and

a communication passage way arranged between the space-forming member and the radial bearing so as to make the end in the thrusting direction of the shaft projecting from the radial bearing and the other end of the shaft communicate with each other.

24. The bearing unit according to claim 23, wherein the communication passage way is a groove formed on the outer peripheral surface of the radial bearing in the thrust direction.

25. The bearing unit according to claim 23, wherein the communication passage way includes a first groove formed on the outer peripheral surface of the radial bearing in the thrust direction, a second groove formed on the end facet of the radial bearing located at the side of the thrust bearing and a third groove formed on the other end facet of the radial bearing.

26. The bearing unit according to claim 23, wherein the housing is integrally formed as a molded body of synthetic resin.

27. The bearing unit according to claim 26, wherein the housing and the radial bearing are integrated by way of an opening arranged in the space-forming member.

28. A rotary drive comprising a bearing unit for rotatably supporting a rotor relative to a stator, wherein

the bearing unit includes:

a shaft;

a radial bearing for peripherally supporting the shaft;

a thrust bearing for supporting an end of the shaft in the thrusting direction thereof;

a space-forming member arranged outside the radial bearing and the thrust bearing;

a housing having the space-forming member in the inside and hermetically sealed except a shaft receiving hole through which the shaft is made to extend;

viscous fluid filled in the housing; and

a communication passage way arranged between the space-forming member and the radial bearing so as to make the end in the thrusting direction of the shaft projecting from the radial bearing and the other end of the shaft communicate with each other.

29. The rotary drive according to claim 28, wherein the housing of the bearing unit is integrally formed as a molded body of synthetic resin.